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ABSTRACT

This document discusses community colleges and career qualifications. Community colleges have a dual challenge in responding to the new economy. First, they will need to play their part in educating and training the workforce that employers need to meet new competitive standards for cost efficiency, quality, variety, customization, convenience, and speed. Second, community colleges will need to meet these same new competitive requirements themselves. Because of their unique flexibility and responsiveness, there is reason for optimism that community colleges will meet these new standards. This paper examines historical trends in the labor market, and identifies five crucial roles that community colleges have to play in the new economy and the new multicultural America. It then looks at projections for future market changes by exploring education and economic opportunity, and the impact of various levels of education on individual earning potential: education and earnings; the value of associate's degrees, some college, and bachelor's degrees; elite jobs, good jobs, and less-skilled jobs; the educational domino effect; the growing importance of nonacademic skills; where the jobs are (i.e., low-wage service jobs, factory jobs, high-tech jobs, education and healthcare jobs, and office jobs); and the community college role in the new economy. Two tables and 18 figures are used to illustrate these points. (VWC)

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NEW EXPEDITIONS
Charting the Second Century of Community Colleges
a W. K. Kellogg Foundation Initiative

Issues Paper No. 11

Community Colleges and Career Qualifications

Anthony P. Carnevale

Educational Testing Service

ABSTRACT

Community colleges have a dual challenge in responding to the new economy. First, they will need to play their part in educating and training the workforce that employers need to meet new competitive standards for cost efficiency, quality, variety, customization, convenience, and speed. Second, community colleges will need to meet these same new competitive requirements themselves. Because of their unique flexibility and responsiveness, there is reason for optimism that community colleges will meet these new standards. This paper examines historical trends in the labor market, projections for future market changes, and the impact of various levels of education on individual earning potential.

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INTRODUCTION

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Early in this country's history and, in fact, pretty much through our first 200 years, a job was easy to find, especially an entry-level, low-skilled job. The American dream and the American reality always have been that people could start at the bottom, and without much formal education, work their way to the top. Even in the modern industrial era when college became a requirement for the growing numbers of professionals, getting through high school, working hard, and playing by the rules were enough to secure good jobs for most of the rest of us. But in the past 40 years, the rules have changed because the nature of the global economy has changed.

These days, if the competition for jobs were a track meet, one might think of entering the job market as competing in the pole vault: The bar is very low for entry-level jobs with low pay; all a

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person needs is a high school diploma, at most. The bar is set quite a bit higher for jobs in the middle tier of the economy that require at least some college and preferably an associate degree. And for the really good jobs, the bar is far above one's head, and the only way to vault it is with at least an associate degree and preferably a bachelor's. Nowadays, the entry-level jobs requiring only high school are not the jobs that are growing; the jobs requiring at least some college, an associate degree, or a bachelor's degree are the ones growing the most.

Data from the National Adult Literacy Survey (NALS) suggest that the average skill requirement in existing jobs is at the level of high school plus a few years of college; essentially community college-level skills. Between 1973 and 1996, jobs that required community college-level skills grew faster than jobs that required bachelor's or graduate degrees. By 1996, the population of workers with postsecondary education was equally divided between those with bachelor's or graduate degrees and those with associate degrees or some college but no associate or bachelor's degree. Among workers with postsecondary education but no bachelor's degree, about 1 out of 3 had an associate degree and 2 out of 3 had some college (see figures 1 and 1A).

On average, people with bachelor's degrees earn more than people with associate degrees or some college. But averages are deceiving. For instance, almost 80 percent of workers with associate degrees or some college earn as much as graduates with bachelor's degrees, and almost one-third of these workers earn more than the average four-year college graduate. Conversely, almost one-third of workers with bachelor's degrees earn less than the average worker with an associate degree or some college. Ultimately, the occupation determines earnings.

The overlap in the earnings of people with associate degrees, bachelor's degrees, and some college is due to the relative flexibility of American labor markets. There are relatively few occupations for which specific

FIGURE 1

In 1997, 55% of Male Workers Had at Least Some College

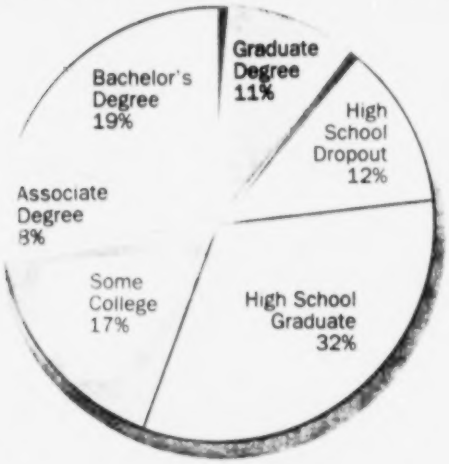
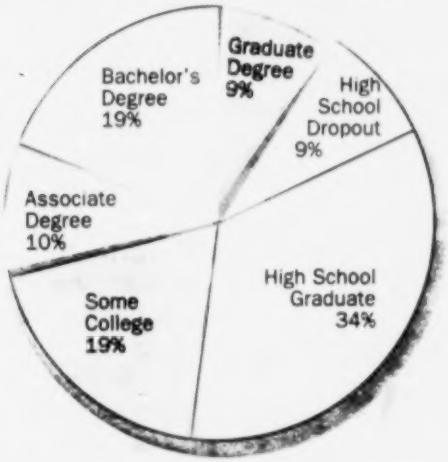


FIGURE 1A

In 1997, 53% of Female Workers Had at Least Some College



Source: Current Population Survey (March 1974, March 1998)

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certifications or educational degrees are required either by convention or by law. Earnings in most jobs increasingly depend on people's ability to leverage the degrees they earn and what they actually learn into access to the highest-paying occupations. Many community college graduates and those with some college are able to access elite managerial and professional jobs that require bachelor's degrees on average. In addition, those with specific technical and professional preparation can earn more than four-year college graduates or even some postgraduates, especially those college graduates who do not enter managerial, technical, or professional occupations. Moreover, temporary shortages in particular occupations can raise the value of technical and professional skills among workers without a bachelor's degree above the earnings of many four-year graduates.

For both economic and demographic reasons, the demand for community college education and training will only increase in the years ahead. Education beyond high school and diverse learning options have become economic imperatives both for traditional 18- to 24-year-old college students and for adults in search of lifelong learning. At the same time, American postsecondary institutions are about to enroll the leading edge of the biggest wave of traditional 18- to 24-year-old students since the baby boom. Annual undergraduate enrollment at two- and four-year schools, which was hovering at 13 million in 1995, will peak at 16 million in 2015.

The current momentum from demographic changes guarantees not only that there will be more students in two- and four-year colleges but also that American campuses will be even more diverse. Between 1995 and 2015, white undergraduates will increase from 9.5 to 10 million (a 6 percent increase). But the actual proportion of white undergraduate students will decline from 71 percent in 1995 to 63 percent in 2015 because the biggest growth will be among students from racial and ethnic minorities. For example, the number of African American undergraduates will grow from 1.7 million in 1995 to 2.1 million in 2015 (a 23 percent increase). Undergraduate participation of Asian American and Hispanic students will grow even faster. Students with Asian/Pacific Islander heritage will almost double from 700,000 to 1.3 million and the number of Hispanic students will climb from 1.4 million in 1995 to 2.5 million in 2015 (a 73 percent increase). In fact, Hispanic undergraduates will outnumber African American college students for the first time in the year 2006.

Community colleges have five crucial roles to play in the new economy and the new multicultural America. Community colleges provide

- the minimum qualification for access to jobs with a future
- the stepping stone to a bachelor's and graduate education
- the pivotal educational institution in the nation's job training and retraining system
- the primary educational resource for the least advantaged, such as dropouts, the educationally disadvantaged, immigrants, and dislocated workers who need a second chance to learn
- the first chance at American education for the surging immigrant population

Because community colleges are affordable, welcoming, and community-based, they are critical vehicles for getting 18- to 24-year-old students started and keeping them on the higher education highway. Currently, about 30 percent of community college students transfer to four-year schools in order to take advantage of the expanding career options that go with a four-year degree. Successful transitions from two- to four-year institutions will become all the more important as the minimum education qualification for good jobs and elite jobs continues to go up. Because of their accessibility, applied focus, and flexibility, community colleges are suited uniquely to serve nontraditional students and employers who need educational programs that integrate learning into work and family life.

Community colleges also have a unique role to play in the new multicultural American community. The oncoming wave of postsecondary students will differ from previous waves in that it will include more ethnic and racial diversity. As with other groups before them, upwardly mobile ethnic and racial groups will rely on community colleges as their on-ramp to the higher education highway. This is especially true for Hispanic students, the largest group, one-half of whom initially enroll in community colleges. These ethnic and racial groups also are highly concentrated in the nontraditional student population, especially Hispanic college students, half of whom are over the age of 25.

Education and Economic Opportunity

The changing relationship between education and the economy begins with the fact that more jobs require at least some postsecondary education. Since 1959, the overall proportion of workers with at least some college increased from less than 1 in 5 to more than half of all workers. These changes in the skills of American workers result from two kinds of labor market shifts: a shift in job creation toward occupations that tend to require at least some college; and increasing postsecondary skill requirements in all jobs, many of which used to require only high school or less. The largest share (about 72 percent) of the increase in postsecondary education requirements comes from higher skills demanded by employers for jobs that previously did not require any college. A significant but smaller share (about 28 percent) comes from occupational shifts toward jobs that have always required postsecondary education.

The increasing value of skill has encouraged more schooling, especially among women (see table 1). The proportion of 25- to 29-year-old students with high school diplomas increased from 80 to 87 percent between 1973 and 1995. Since 1973, the proportion of the workforce that had either attended or graduated from a two-year or four-year college increased from fewer than one-third to more than one-half of all workers. The surge among those who attended college but did not get a bachelor's degree paralleled, and slightly exceeded, the overall increase in bachelor's degrees. In 1973, those with some college (but no bachelor's degree) accounted for only 12 percent of the workforce; by 1995, they accounted for more than 27 percent of the workforce.[1] Currently, college-educated workers are divided almost evenly between those with some college and those with four-year degrees or graduate degrees.

Education and Earnings

While the share of jobs that require at least some college has more than doubled since

[1] In official government statistics, prior to 1992, some college includes people with associate degrees, along with people who have attended college but received neither associate degrees nor bachelor's degrees.

TABLE 1

Share of the Workforce by Educational Attainment, 1973 and 1997

	Men			Women		
Educational Attainment	1973	1997	Increase or Decrease	1973	1997	Increase or Decrease
High School Dropout	33.3	12.2	-63.5	30.2	9.0	-70
High School Graduate (only)	35.9	32.1	-11	46.2	34.2	-26
Some College	12.5	25.5	+105	11.5	28.7	+150
Bachelor's Degree	9.6	19.2	+100	7.3	19.0	+161
Graduate Degree	8.7	11.0	+26	4.8	9.0	+88
Total	100%	100%		100%	100%	

Source: Current Population Survey (March 1974, March 1998)

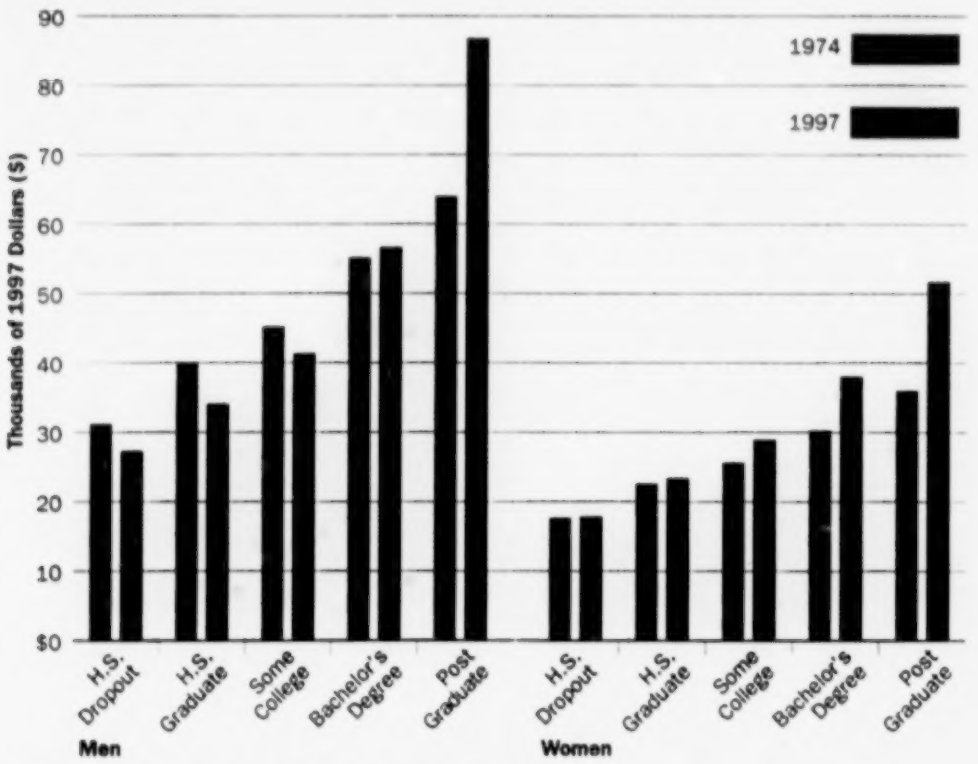
1959, the relationship between postsecondary attainment and earnings has become more complex. The combined effects of a slowly growing economic pie and the increasing value of skill have created a competitive pressure cooker based on educational attainment. Because of low productivity growth, the size of the economic pie has not grown very much since 1973 (compared with the more robust growth between 1946 and 1973), but those with postsecondary education are getting bigger slices of the slow-growing pie.

Among men, the actual value of getting "some" college but no bachelor's degree has declined slightly, but, because the value of high school diplomas has declined much more than the value of some college, earnings differences between men with high school diplomas and men with some college have widened. The actual value of bachelor's degrees has increased slightly for men, and the value of graduate degrees has increased for men, widening the differences in value between bachelor's and graduate degrees even further (see figure 2).

Among women, the actual value of a college education has increased, along with the relative earnings differences between high school- and college-educated women. Women, at every education level, still do not earn as much as men, but they are making steady gains on male wage advantages (see figure 2). Continuing differences in male and female wages are due, in part, to the fact that women are paid less than men in the same jobs. But the principal causes are that women are traditionally segregated into occupations that pay less; they do not

FIGURE 2

College-Educated Workers Are Getting a Growing Share of the Economic Pie



Source: Current Population Survey (March 1974, March 1998)

work full time for as many years in their careers as men; and women work fewer hours each year.[2]

Although women have yet to achieve earnings equality with men, opportunities for women have increased as the barriers to managerial and professional jobs have come down, and as the occupational structure shifts from traditional male jobs, especially in manufacturing, to work in education, healthcare, and business services. A substantial share of economic progress among women has been due to their ability to break out of the traditional female occupations. For instance, in 1959, 76 percent of women with bachelor's degrees worked in education or healthcare. By 1997, only 42 percent of women with four-year degrees were employed in these fields.

Economic progress among women also is due to the fact that women are working smarter. The share of women with associate degrees and some college exceeds the male share. The share of bachelor's and graduate degrees among men and women is rapidly approaching equality, and the rate of increase in bachelor's and graduate degree attainment among women far exceeds that of men (see table 1).

Women also are working harder. In the decade of the 1970s, few women stayed in the labor force continuously. Only 4 percent worked full time, full year, in at least 8 out of 10 years. All prime-age women in the paid labor force averaged only 870 hours per year. In the decade of the 1980s, prime-age women increased their working time to 1,243 hours per year (a 44 percent increase) and 20 percent were full time, full year, in at least 8 out of 10 years. (Rose 1994). During the decade of the 1980s, 70 percent of men worked full time, full year, in at least 8 out of 10 years, and their yearly average working time was 2,100 hours.

Data from census surveys, using a single-year rather than a 10-year approach, confirm the increase in women's hours worked. In 1979, prime-age women who worked at least some time in the paid labor force during the year averaged 1,580 hours; by 1997, this figure had risen to 1,789 hours worked (almost a 20 percent increase). In 1997, prime-age male workers, each averaged 2,181 (22 percent more hours worked than women).

The Value of Associate Degrees, Some College, and Bachelor's Degrees

On average, the value of a bachelor's degree is greater than the value of an associate degree or some college (but no degree). But there is substantial overlap between those with an associate or some college and the earnings of those with a bachelor's at every earnings level (see figure 3). Almost 80 percent of people with associate degrees or some college earn as much as people with bachelor's degrees.

The proportions of workers with associate degrees, some college, and bachelor's degrees are most similar in the middle of the earnings distribution. Among workers who earn between $30,000 and $50,000, 29 percent have associate degrees or some college, compared with 31 percent who have bachelor's degrees. There is a higher proportion of those with associate degrees or some college at the lower end of the earnings distribution (see figure 4). For instance, 57 percent of workers with associate degrees or some college, compared with 39 percent of those with bachelor's degrees, earn less than $30,000 a year.

There is a higher proportion of workers with bachelor's degrees, compared with those with associate degrees or some college, at the highest income levels. Among workers who make more than $50,000, 27 percent have bachelor's degrees and 13 percent have associate degrees or some college. Although the average earnings of workers with bachelor's degrees are higher than the average earnings of workers with associate degrees or some college, almost one-third of workers with an associate degree or some college do earn more than the median earnings of

[2] For a historical review, see Levy, Frank, and Richard J. Murnane. 1992. "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations." *The Journal of Economic Literature* 30 (September):1333-81. See also, Blau, Francine D. 1998. "Trends in the Well-Being of American Women, 1970-1995." *Journal of Economic Literature* 36, No. 1 (March):112-166.

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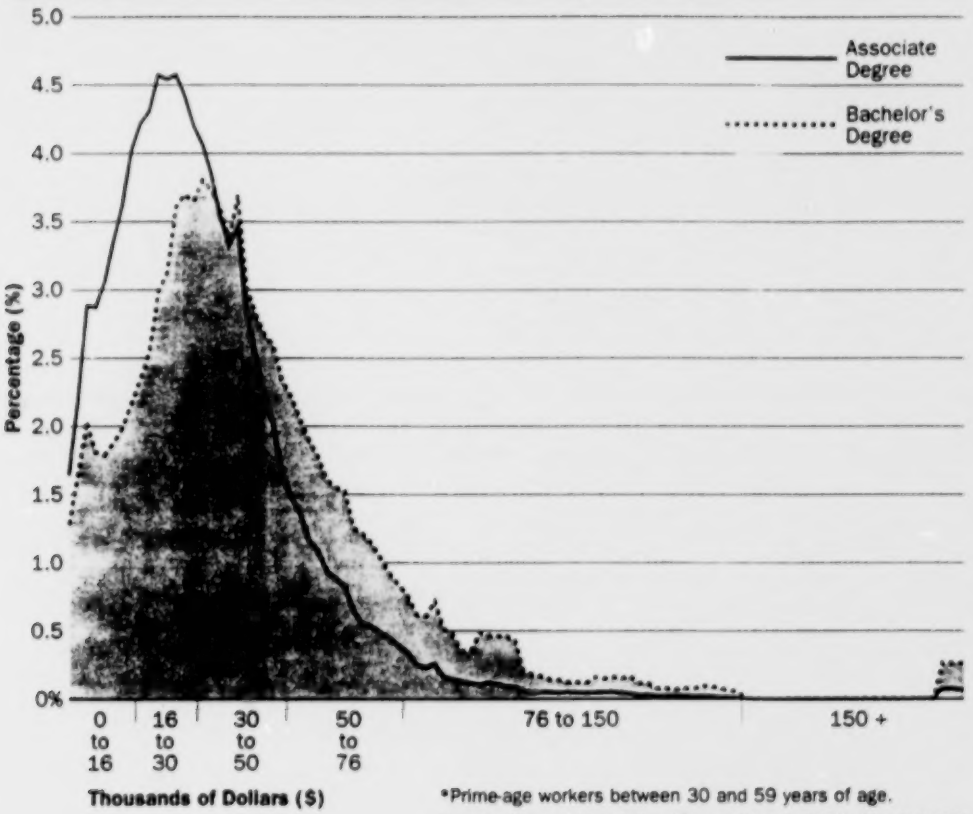
FIGURE 3

There Is an 80% Overlap in the Earnings Profiles of Workers' With Associate Degrees or Some College and Workers With Bachelor's Degrees

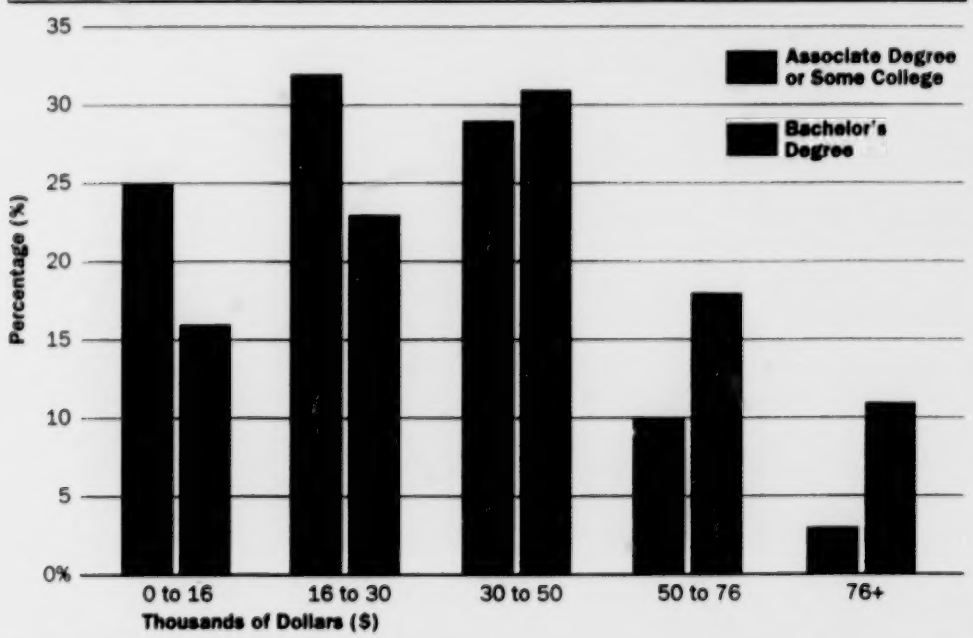


*Prime-age workers between 30 and 59 years of age.

Source: Current Population Survey (March 1974, March 1998)

FIGURE 4

The Proportion of Workers' With Associate Degrees, Some College, or Bachelor's Degrees Are Most Similar in the Middle of the Earnings Distribution



*Prime-age workers between 30 and 59 years of age.

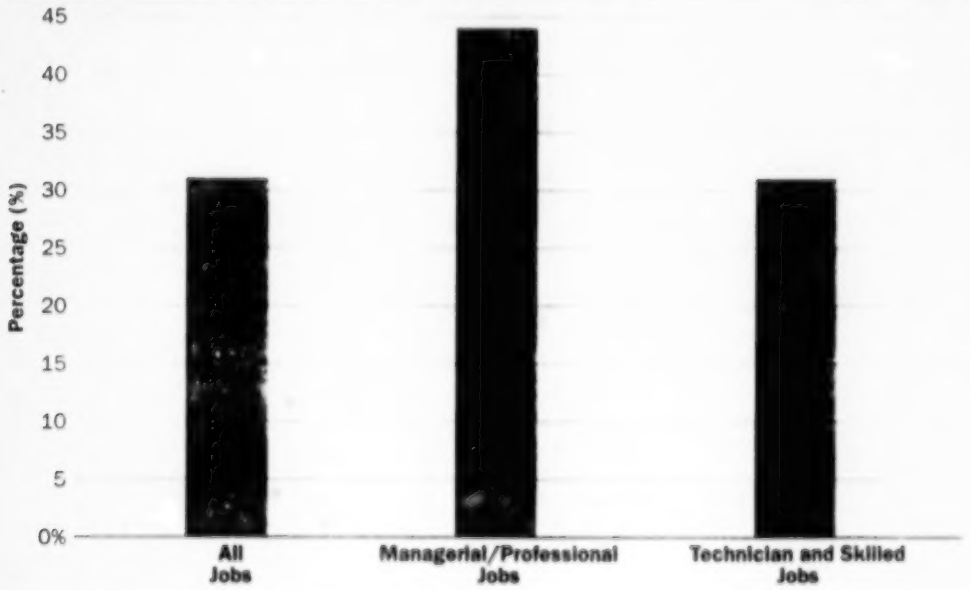
Source: Current Population Survey (March 1974, March 1998)

workers with bachelor's degrees (see figure 5). Those with associate degrees or some college who do better than the average workers with bachelor's degrees tend to be concentrated in elite managerial and professional jobs or in technical or skilled occupations.

Conversely, almost one-third of workers with a bachelor's degree make less than the median earnings of workers with an associate degree or some college (see figure 6). The

FIGURE 5

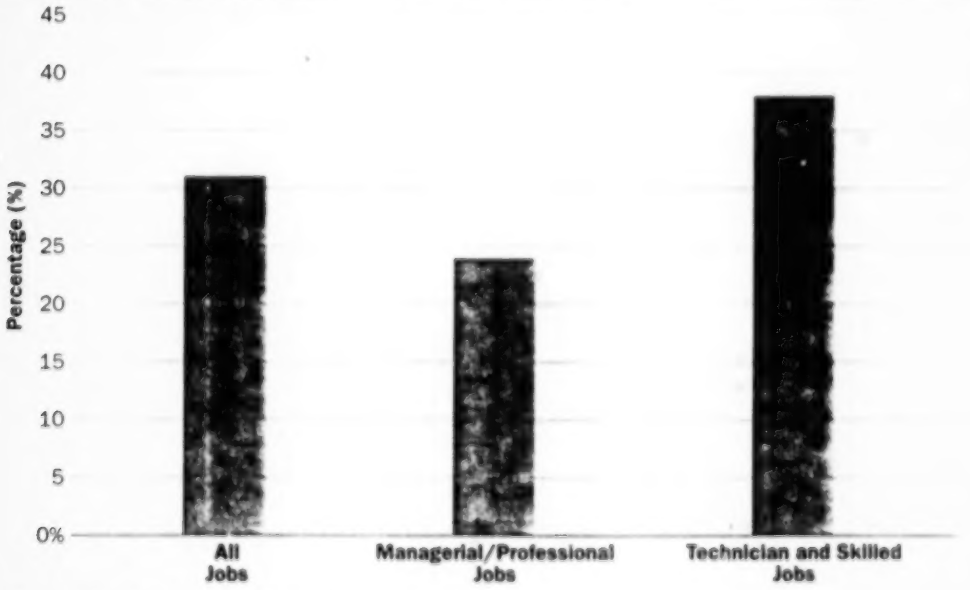
A Substantial Share of Workers' With Associate Degrees or Some College Earn More Than the Average Workers With Bachelor's Degrees



*Prime-age workers between 30 and 59 years of age.
Source: Current Population Survey (March 1974, March 1998)

FIGURE 6

A Substantial Share of Workers' With Bachelor's Degrees Earn Less Than Average Workers With Associate Degrees or Some College



*Prime-age workers between 30 and 59 years of age.
Source: Current Population Survey (March 1974, March 1998)

largest share of these workers with bachelor's degrees who earn less than the average earnings of workers with associate degrees or some college is concentrated in jobs for technical or skilled workers.

Elite Jobs, Good Jobs, and Less-Skilled Jobs

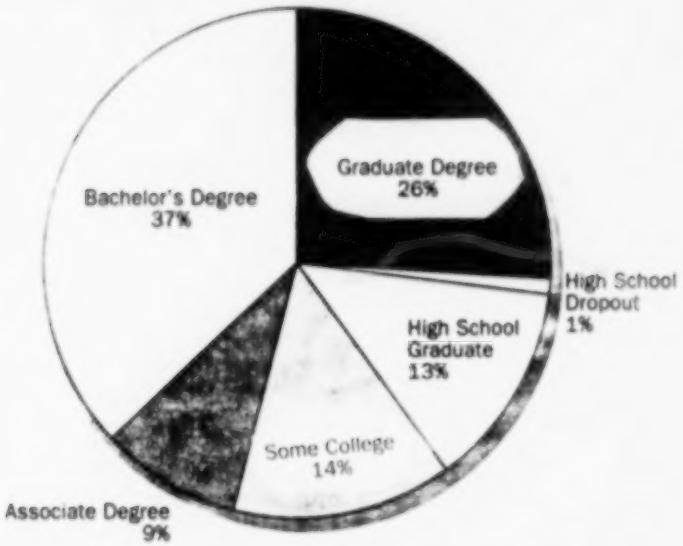
The earnings hierarchy in the American labor market divides roughly into three occupational segments: the highest paid elite managerial and professional jobs; good, well-paid jobs held by crafts workers, technicians, clerical workers, and others; and low-wage, less-skilled jobs in retail, personal services, and factories.

Of the prime-age workforce—84 million workers between the ages of 30 and 59—29 million (or 34 percent) are elite, highly paid managerial and professional workers (see figure 7). More than 85 percent of workers in these jobs have at least some postsecondary education. Almost 25 percent of these elite job holders has an associate degree or some college, and more than 60 percent have bachelor's degrees or better. On average, these jobs pay $59,000 for men and $34,000 for women.

Another 31.5 million (37 percent of jobs) are good jobs, including technicians, supervisors, crafts workers, and clerical workers that pay $36,000 for men and

FIGURE 7

Virtually All Elite Managerial and Professional Jobs Now Require at Least Some College. The Average Pay for Elite Jobs Is $59,000 for Men and $34,000 for Women



Source: Current Population Survey (March 1974, March 1998)

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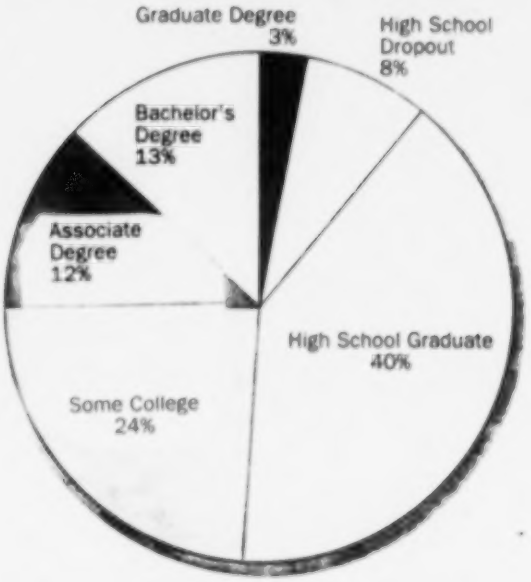
FIGURE 8

Over One-Half of Good Technician and Skilled Jobs Have Postsecondary Education. The Average Pay for Good Jobs Is $36,000 for Men and $22,000 for Women



Source: Current Population Survey (March 1974, March 1998)

$22,000 for women, on average. More than 50 percent of those who hold good jobs have at least some college; more than 33 percent have associate degrees or some college; and more than 15 percent have bachelor's or higher degrees (see figure 8).

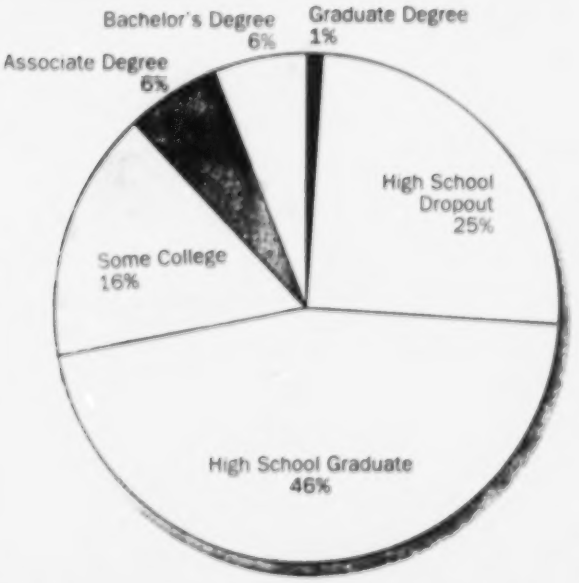
Finally, the 24 million least skilled and least well paid jobs represent 29 percent of all jobs and pay $25,000 for men and $13,000 for women. Most of these jobs are low-wage services jobs. Almost 30 percent of workers in these jobs have at least some college (see figure 9). But most workers in low-wage services jobs with some college are in transition to further education or better employment.

The Educational Domino Effect

Increasing skill requirements in all jobs have had a domino effect in the job queue as those with more educational attainment are bumping those with less education in the competition for elite and good jobs. Between 1959 and 1997, the proportion of the nation's elite managerial and professional jobs that went to applicants with bachelor's degrees increased from 41 to 63 percent. Over the same period, the proportion of elite jobs that went to applicants with some

FIGURE 9

Nearly Three-Quarters of Those With Less-Skilled Jobs Never Attended College. The Average Pay for Less-Skilled Jobs Is $25,000 for Men and $13,000 for Women



Source: Current Population Survey (March 1974, March 1998)

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college but no bachelor's degree increased from 22 to 23 percent. But over the same period, the proportion of elite jobs that went to high school graduates declined from 22 to 13 percent, and the proportion of elite jobs that went to dropouts declined from 15 to 1 percent.

The education qualification also has gone up for good jobs, such as those held by crafts workers, technicians, and clerical workers. In 1959, more than 57 percent of the men and 30 percent of the women in these jobs were high school dropouts. By 1997, only 11 percent of the men and 5 percent of the women who held these jobs were dropouts. Similarly, in 1959, only 14 percent of the men and 19 percent of the women who held these jobs had associate degrees or some college. In 1997, more than half of the workers who held good jobs had associate degrees or at least some college.

Even workers in the less-skilled jobs have more skills. In 1959, three-quarters of the workers in these jobs were dropouts. In 1997, only one-quarter were dropouts, one-half were high school graduates, and one-quarter had a least some college.

The Growing Importance of Nonacademic Skills

The economy not only requires more academic skill to get jobs but also a whole new set of more general skills, such as leadership, problem solving, and communication. Although our ability to teach or assess these skills is primitive, employers are using educational attainment, especially at college level, as a proxy for attainment of these skills.

There are four apparent reasons why these more general skills appear to be growing in importance:

1. Increasing productivity in manufacturing and technical functions means that fewer workers with specific technical skills are needed to do the same amount of work. As a result, most new positions are being created in services, education, healthcare, and office jobs where fewer technical skills and more general skills are required.
2. As machines perform more of the repetitive work, workers, including technical workers, spend more time deploying technology and working with colleagues and customers. As a result, every job requires more general skills to deploy the machine's capabilities and to work with coworkers and customers. This means that education and training for all jobs, including technical jobs, need to include these more general skills.
3. A new, fast-paced, and unforgiving global economy results in constant change in skills for specific jobs. Constant economic and technological change also discourages growth in job tenure and increases the overall rate of job creation and destruction. As a result, workers need more general skills that allow them to keep up with changing skill requirements in their current jobs and adapt to a greater number of new jobs during their careers.
4. In an era of increasing competition, these new general skills are more valuable. They relate directly to new competitive requirements, such as quality, variety, customization, continuous innovation, and customer service.

Companies that make or sell quality products or deliver quality service need workers with solid academic and occupational preparation. But good academic basics do not guarantee quality. We all know people who have solid academic and occupational skills but do shoddy work. Ultimately, the skill necessary for employers to meet new quality standards is the ability of employees to take responsibility for the final product or service, regardless of their particular job assignment. The phrase "it's not my job" doesn't cut it in a workplace with a commitment to quality.

The growing consumer demand for customization and variety requires workers with problem-solving skills and creativity.

For example, in manufacturing, the shift from long production runs of standardized products to short production runs specialized for individual customers requires workers who can handle exceptions and solve problems creatively. Successful service institutions have workers who have learned the problem-solving skills and creativity necessary to tailor their offerings to the needs of small groups and individuals.

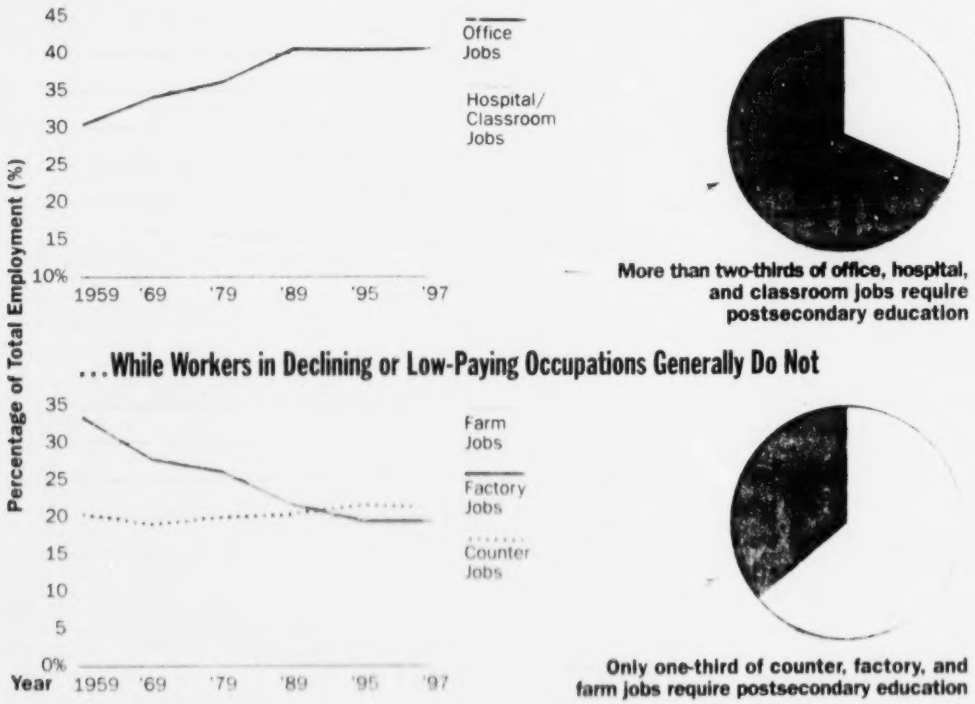
To continuously improve products and services, institutions require employees up and down the line to have leadership and learning skills. Good customer service requires interpersonal and communication skills. And in increasingly diverse workplaces and customer markets, especially in diverse global markets, all workers need to value diversity.

Where the Jobs Are

Access to two- and four-year colleges has become a prerequisite for economic success, because job growth is occurring in occupations that require college-level skills and where skill requirements are growing the fastest. The proportion of low-wage service-industry jobs that require high school or less is not growing. The number of high-paying blue-collar jobs available to workers with high school diplomas is shrinking. Job growth is concentrated in managerial, professional, technical, healthcare, and education occupations, which generally require college-level skills (see figure 10).

The changes in the kinds of jobs available and the skills required to get them have been dramatic. One way to look at these changes is to divide the economy into five functional areas based on what people actually do and the most common work site of that activity: 1) farms; 2) factories; 3) hospitals and classrooms; 4) offices; and 5) lunch counters, retail stores, hotels, stockrooms, and other places where low-wage services work is done. Tracking the share of total

FIGURE 10 **Workers in Growing, Good-Paying Occupations Require Postsecondary Education...**



Source: Current Population Survey (March 1974, March 1998)

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employment in each of these areas shows that jobs in hospitals and classrooms have grown substantially and office employment has grown the most, from 30 percent in 1959 to 41 percent in 1995. The overall number of high-tech jobs has not grown much, but there are a lot of new openings as the demand for high-tech workers shifts from crafts workers to information technology. By contrast, factory employment declined from 33 to 19 percent over the same period. Farm jobs continue to decline. Low-wage services jobs have held steady at about 20 percent of all jobs.

At the same time that the economy has been shifting jobs from farm and factory to offices, hospitals, and classrooms, educational requirements have been rising. In 1959, only 20 percent of prime-age workers (30- to 59-year-olds) had some postsecondary education; today that figure has risen to 56 percent. This rise affected all sectors of the economy but has been most pronounced in the fastest-growing job sectors. In education and healthcare, fully 74 percent have some postsecondary training. In offices, 66 percent have attended at least some college. In the other sectors of the economy that are not growing, college attendance is less required but increasing. Twenty-seven percent of farm and extractive workers, 34 percent of industrial workers, and 39 percent of low-wage services workers have at least some college.

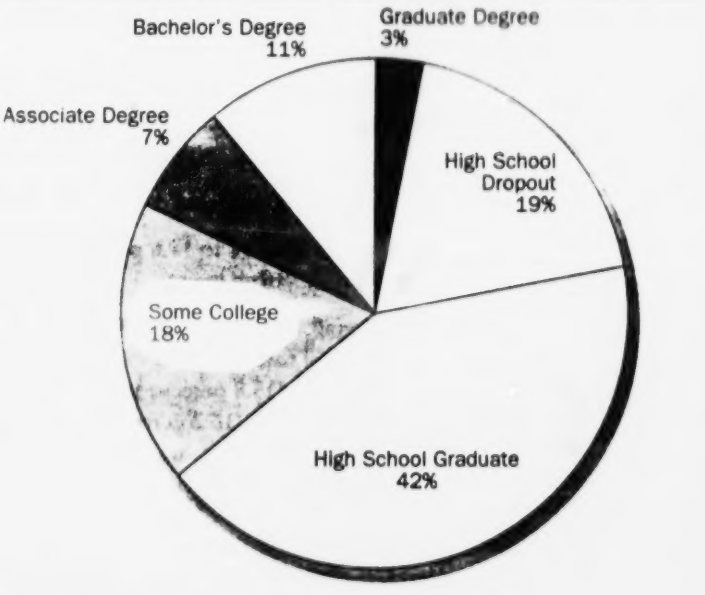
Low-Wage Services Jobs

Low-wage services jobs are a mixed bag. Most of these jobs are at the bottom of the new earnings and skill hierarchy. They include jobs for cashiers, retail clerks, stockers, cab drivers, cleaners, and other occupations that typically pay low wages and require low skills.

The majority of these jobs require high school or less. About 60 percent of workers in these jobs do not have any postsecondary education (see figure 11). About 40 percent of workers who have low-wage services jobs have at least some college. Among the almost 40 percent of these workers with postsecondary education who are employed in these types of jobs, many are students who are working temporarily until they complete their education. This is especially true of

FIGURE 11

Few Low-Wage Services Workers Have College



Source: Current Population Survey (March 1974, March 1998)

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workers under the age of 30 who make up a majority of employment (55 percent) in this sector.

Because we have low minimum wages and no benefit guarantees, we have a lot of these low-wage services jobs in the United States compared with other nations that guarantee high minimum wages and benefit guarantees for all workers. These jobs are easy to get but they do not pay well and carry few or no benefits.

The share of low-wage services jobs has not grown since Dwight D. Eisenhower was president in the 1950s, remaining at about one-fifth or about 26 million of the available work opportunities. Many of these low-wage services jobs were traditionally held by women, but the trend has changed as female educational attainment has risen and job opportunities for women have improved in other areas of the economy. Hispanic women are the exception to this trend. At the same time, an increasing share of the burden in low-wage services jobs has fallen on men, especially Hispanic men, because the decline in the number of low-skilled (but well-paid) blue-collar factory jobs has made low-skilled men more dependent on the low-wage services jobs.

Between 1973 and 1997 the share of low-wage services jobs has

- declined from 21 to 15.7 percent for white women
- increased from 10 to 12.2 percent for white men
- declined from 33 to 16.7 percent for African American females
- increased from 11 to 15.6 percent for African American men

Overall, a larger share of Hispanic workers held these jobs in 1997 than either white workers (13.8 percent) or African American workers (16.2 percent). The share of Hispanic men in low-wage services jobs rose from 15 to 23 percent between 1973 and 1997. The share of Hispanic women in low-wage services jobs rose by a less substantial margin, from 23 to 25 percent.

Factory Jobs

While these low-wage services jobs are not growing as a proportion of all jobs, factory jobs are shrinking proportionally and in absolute numbers. The declining number of factory jobs that remain is increasingly being filled by workers who have skills beyond high school.

Overall, fewer of us are in factory jobs, principally because productivity is growing in these industries.[1] Productivity, usually triggered by a new technology or high-performance work processes, allows companies to make more products with the same size or a smaller workforce, often people with higher skills. For example, since 1960, the United States has increased real manufacturing output by more than $2 billion annually, while cutting by nearly one-half the number of production workers. In addition, because of the changing technology and the introduction of flexible high-performance work processes, the factory workers who remained needed more skill. In 1959, only about 8 percent of workers on the factory floor had any college. By 1997, that proportion had increased to more than 34 percent.

In spite of the increase in college-educated workers in factory jobs, the proportion of college-educated factory workers is still relatively small (see figure 12). About 16 percent of factory workers have attended college but do not have a degree. Ten percent have a bachelor's degree or higher. The decline in factory employment has been especially difficult for less-educated Hispanic and

[1] Trade is another factor that eliminates and creates jobs, especially in manufacturing. For instance, if manufacturing jobs were still the same share of all U.S. jobs as they were in 1959 at their peak, there would be roughly 15 million more manufacturing jobs than there are now. Of these 15 million, about 2 million were probably lost to trade and the other 13 million were lost to productivity improvements. Jobs lost to trade tend to be low-skilled, low-wage jobs. Jobs gained from trade tend to be more highly skilled and highly paid. Trade probably has more impact on wage levels than on the number of jobs. The globalization of competition for low-skilled jobs, especially in manufacturing, holds down wages of low-skilled workers. Some estimates suggest that trade accounts for as much as 30 percent of the increase in wage disparities since the 1970s. Trade tends to drive down the earnings of low-skilled labor and increase the relative earnings of skilled workers in manufacturing and in the economy on the whole.

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African American workers who relied on factory jobs for a boost into the American middle class.

Between 1973 and 1997:

- the share of white workers in factory jobs fell from 30 to 19 percent
- the share of African American workers in factory jobs fell from 34 to 23 percent
- the share of Hispanic workers in factory jobs fell from 43 to 28 percent

High-Tech Jobs

This loss in factory employment is not being made up by technical jobs, inside or outside of manufacturing.[4] Shifting demands within the technical workforce—from jobs for pipe fitters and industrial welders to jobs for computer technicians—do create constant job openings. But overall, the technical workforce is not growing as rapidly as other parts of the economy. More and more of us are using technology on the job, but it takes fewer of us to make, maintain, or repair our technology. Growing productivity has held the overall number of jobs that require technical education to around 10 million out of the total 133 million jobs in the U.S. economy.

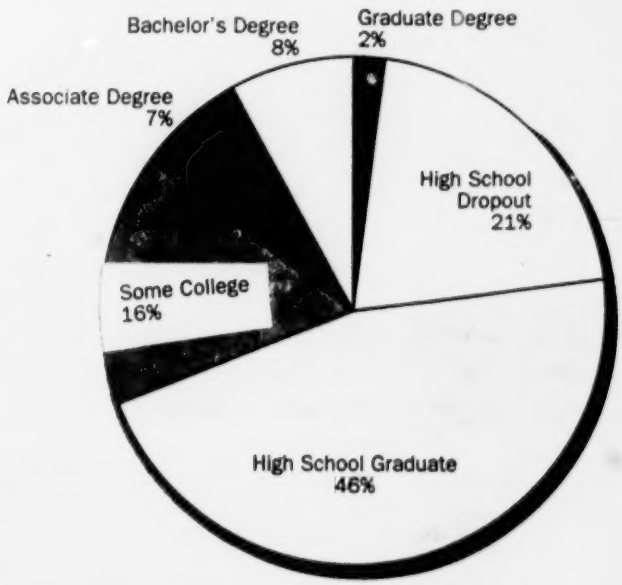
The high-tech job market includes a set of highly skilled jobs that require some college, a bachelor's degree, or graduate education (see figure 13). About 86 percent of high-tech jobs require at least some postsecondary education. Almost 70 percent of high-tech workers have associate degrees, bachelor's degrees, or graduate degrees.

Hispanic and African American workers are underrepresented in high-tech fields.

[4] Although there is much discussion about the importance of high-tech employment, it is rarely carefully defined. This document defines high-tech jobs to include only those jobs that are heavily science-based and/or utilize specialized machinery and equipment. These jobs either require at least a bachelor's degree (e.g., engineers, chemists, architects, computer system analysts, etc.) or some specialized postsecondary education (e.g., computer programmers, medical and other technicians, cad-cam operators, etc.). Virtually, all workers today have some contact with technology, especially information technology, but the definition of high-technology workers used in this paper limits their number to those with some special expertise, education, and training.

FIGURE 12

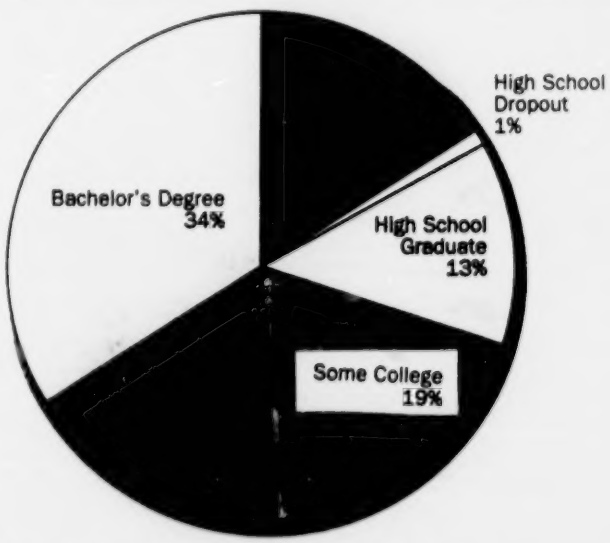
Most Factory Workers Have Only a High School Education



Source: Current Population Survey (March 1974, March 1998)

FIGURE 13

Virtually All High-Tech Jobs Require Postsecondary Education



Source: Current Population Survey (March 1974, March 1998)

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While 7.8 percent of white workers in 1997 were employed in high-tech jobs, only 3.5 percent of Hispanic and 4.1 percent of African American workers held such jobs. Hispanic and African American workers tend to be concentrated in high-tech jobs that require associate degrees or some college: 3.5 percent of white workers, compared with 3.3 percent of African American and 2.2 percent of Hispanic workers, have these jobs.

Underrepresentation of Hispanic and African American workers is especially severe in high-tech jobs that require a bachelor's or graduate degree. While 4.3 percent of white workers had college-educated, high-tech jobs, only 1.3 percent of Hispanic and 1.4 percent of African American workers were employed in this area.

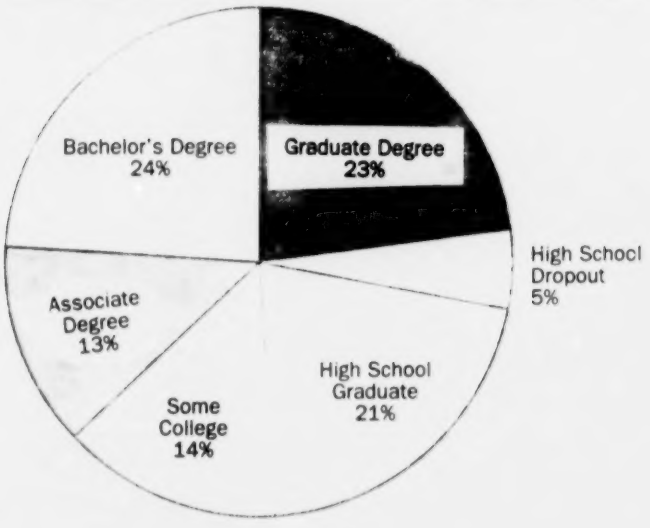
If low-wage services jobs and high-tech jobs are not growing, and factory jobs are declining, where are all the new jobs we keep hearing about coming from? And who is hiring the growing numbers of college-educated workers? The growth is coming primarily from three areas: education, healthcare, and white-collar office jobs throughout the rest of the economy.

Education and Healthcare Jobs

More of us are working in education and healthcare—jobs associated with the development and maintenance of human capital—because the new economy requires more education, the demand for healthcare continues to rise as the population ages, and productivity is not rising as fast in these education and healthcare jobs. New technology and work processes have not reduced the number of workers it takes to provide education or healthcare. Because of increased demand and slow productivity growth, since 1959, healthcare has grown from 3.7 to 7.5 percent of all jobs. Over the same period and for the same reasons, education jobs have grown from 5.6 to 8.7 percent of all jobs.

The healthcare and education sectors are the most postsecondary-education intensive in the economy. Most of these new jobs in schools and healthcare institutions require higher education. More than 54 percent of education and healthcare workers are managers and professionals who require a two-year or four-year education. Seventy-four percent of education and healthcare workers have at least some college (see figure 14).

FIGURE 14 **Three-Quarters of the Jobs in Education and Healthcare Require at Least Some College**



Source: Current Population Survey (March 1974, March 1998)

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Access to these healthcare and education jobs varies by race. Almost 15 percent of white workers, compared with 17 percent of African American and about 10 percent of Hispanic workers, are employed in these fields. Hispanic workers are less likely than white or African American workers to be employed in these fields, and Hispanic workers who are employed here are likely to hold lower-paying jobs requiring less education. African American workers actually have a larger representation than their white counterparts in the education and healthcare fields, but they are more likely to hold lower-skilled jobs requiring less education.

Office Jobs

The largest, fastest-growing, and best-paid group of employees are office workers. Managers, accountants, editors, salesmen, and marketers, among other office jobs, number 54 million, 41 percent of the 133 million jobs in the American economy (Carnevale and Rose 1998).

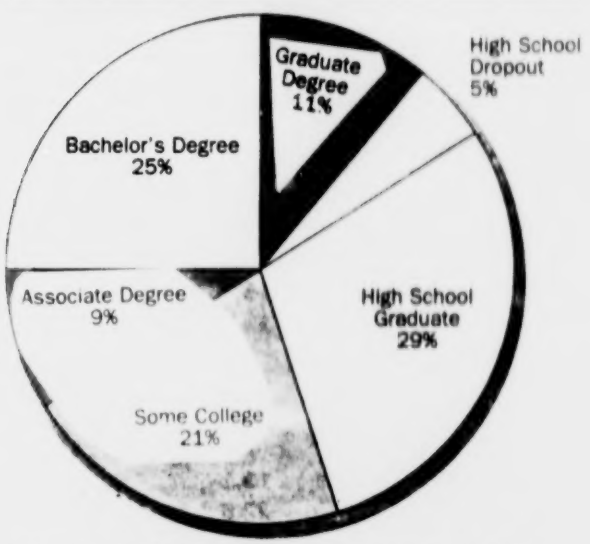
To help put that into perspective, information technology will add 750,000 jobs by 2006, but office jobs will grow by 4.4 million. These office jobs pay one and a half times the jobs in other economic sectors. Sixty-six percent of office workers have at least some college, while 30 percent have bachelor's degrees, making office work second only to education and healthcare as the most highly educated job sector (see figure 15).

There should be particular concern about the relative lack of educational preparation for the office economy by Hispanic and African American workers. Members of these groups are not getting their fair share of these most highly paid and fastest-growing jobs. Unhappily, access to office jobs among racial and ethnic groups fits the usual pattern. Only 1 in 4 Hispanic men and 1 in 3 Hispanic women are employed in office work, compared with almost 50 percent of white workers and 36.8 percent of African American workers.

It seems clear, then, that for the U.S. education establishment, including commu-

FIGURE 15

Two Out of Three Office Workers Have at Least Some Postsecondary Education



Source: Current Population Survey (March 1974, March 1998)

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nity colleges, the skills required by the office—the largest, most important part of the economy—should demand more attention. There is at least suggestive evidence that providing more education suited for office work would be useful to the substantial share of workers who get some college but no associate or bachelor's degree, and who tend to end up working in office jobs (see table 2). Training in office skills also would be useful for the more than 60 percent of men and the 50 percent of women with associate degrees in technical and professional fields to move into managerial and supervisory positions.

While associate degrees tend to be more effective in providing access to technical and professional jobs, more than one-third of [illegible] have associate degrees and almost one-half of the women with associate degrees end up doing office work as managers, business professionals, supervisors, and clerical workers. Among those with some college but no bachelor's or associate degree, about 40 percent of the men and more than 60 percent of the women do office work.

Community College Role in the New Economy

It has become commonplace to note that in contemporary America, postsecondary education and training have become critical to individual and corporate economic success. This commonplace observation is hardly news in the 1990s, but would have been an odd idea if offered in the first three quarters of this century. Until the 1970s, the United States' economic dominance rested on a solid agricultural and manufacturing base wherein workers with high school or less could provide comfortable livings for their families. However, since the 1980s, increases in global competition have altered the underlying structure of the existing economy in ways that have made postsecondary education the price of admission to the American middle class. By the early 1990s, over one-half of the nation's workforce indicated they needed training beyond high school to obtain their jobs, and 41 percent needed retraining to keep up with the new skill requirements on their job (Bureau of Labor Statistics [BLS] 1992).

Students or workers can get their education and training through an array of diverse providers, ranging from structured two- and four-year college programs to formal and on-the-job company-training programs. However, community colleges maintain a unique position within the nation's education and training system. Unlike company-training programs, which usually omit academic preparation, and four-year colleges, which provide academic challenges but rarely link them to occupational constructs, community colleges are able to

TABLE 2

Occupational Distribution of Workers With an Associate Degree or Some College: 1997

	Men		Women	
	A.A. Degree	Some College	A.A. Degree	Some College
Office Work				
Managers/Business Professionals	15.7	18.8	16.5	19.0
Supervisors	13.1	13.5	5.9	6.6
Clerical	6.9	8.0	26.8	35.2
Subtotal	35.7	40.3	49.2	60.8
Technical/Professional				
Technicians	7.4	4.3	11.0	6.6
Scientists, Education/Health Professionals	13.1	6.5	23.6	6.7
Crafts, Police/Firefighters	22.6	21.9	1.8	2.2
Less-Skilled Jobs	21.2	27.1	14.3	23.6
Subtotal	64.3	59.8	50.7	39.1
Total	100%	100%	100%	100%
Mean Earnings	$38,507	$38,464	$25,271	$22,182

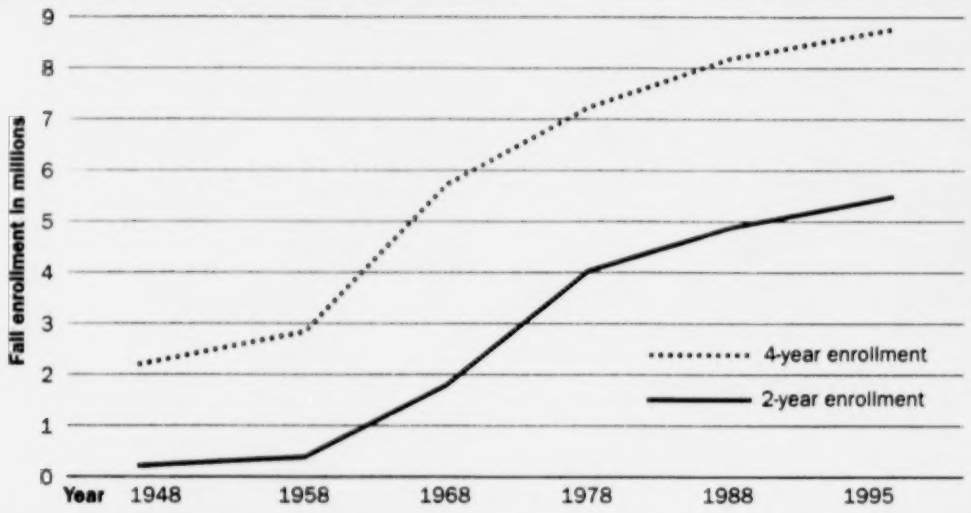
Source: Current Population Survey (March 1974, March 1998)

provide students with the tools they need to sustain careers in the modern economy by developing a curricula that incorporates both academic knowledge and occupational skill training. The applied learning approach embraced by community colleges provides graduates with access to jobs that general education alone no longer guarantees, and the broad occupational learning it provides is transferable and, therefore, more beneficial than job-specific training.

Community colleges maintain a unique position among educational institutions as providers of both skill training and academic knowledge. Their phenomenal growth has paralleled that of four-year schools (see figure 16). Two-year schools educated 5.4 million students in 1994, gradually converging toward equal shares of total enrollments (undergraduate, graduate, and first-professional) vis-a-vis four-year schools (see figure 17). Although community col-

FIGURE 16

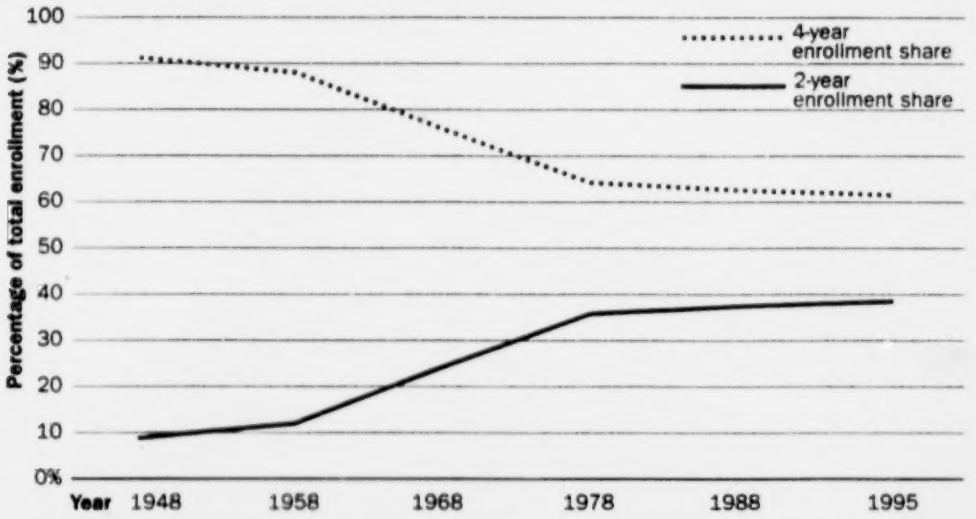
College Enrollments Have Skyrocketed Since 1948



Source: *Historical Statistics of the United States, Colonial Times to 1970.* Table series H 700–715. U.S. Department of Commerce, Bureau of the Census

FIGURE 17

The Proportions Attending Two-Year and Four-Year Schools Are Converging



Source: *Historical Statistics of the United States, Colonial Times to 1970.* Table series H 700–715. U.S. Department of Commerce, Bureau of the Census

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leges often serve as conduits to four-year educational programs—with about 30 percent of students who complete two-year programs continuing on to four-year schools—more often than not they provide job-related training for people who never complete bachelor's degrees. For workers who needed training to obtain their current jobs, two-year schools trained nearly as many workers as did formal company programs (8 and 12 percent, respectively). Furthermore, workers who needed skill improvement training once on the job were just as likely to obtain their training from two-year colleges (4 percent) as from four-year colleges (5 percent) (BLS 1992).

Postsecondary education, especially at community colleges, has become our real school-to-work system and our worker training and retraining system. We do not have, and are unlikely to build, an alternative apprenticeship track for noncollege students. Our egalitarian biases will not allow tracking, and employers are unlikely to expand their training role to emulate the cumbersome European employer-based apprenticeship system, especially at a time when economic requirements require cost reduction and agility.

Employers are our best job-specific trainers. Among similarly educated prime-age workers, job training by employers brings the highest earnings returns and the greatest productivity improvements on the job. But the lion's share of workforce preparation and retraining will continue to be done by educators, most effectively in collaboration with employers. Employers will educate and train when they must, but they are unlikely to expand training to students who do not work for them or to their own less-skilled workers. Employer training is extremely expensive. In a school classroom, only the teacher gets paid. In an employer-training session, everyone is being paid. As a result, employer-based training is minimized, job-specific, and concentrated on the most skilled workers because they are in jobs that require the most retraining and where the economic returns from training are the highest.

In addition, over the coming years, employers will be preoccupied with retraining their own most highly skilled workers to keep up with changes in technology and new work processes (see figure 18). As managerial, technical, and professional workers

FIGURE 18 **Formal Company Training Costs Will Increase by at Least $18 Billion Between 1991 and 2005**

Source: Educational Testing Service

grow as a share of the workforce, by 2005 employers will have to spend an additional $15 billion more than they now spend every year, or $78.4 billion in all, just to maintain their current training commitments to their most highly skilled workers (Carnevale and Desrochers 1999b). Low-skilled adults will have to get training on their own from postsecondary institutions. Consequently, unless community colleges educate and train low-skilled adults, those students will have no place to go.

Ultimately, both the public and private interest are best served by creating dynamic networks of employers and community colleges. Strengthening collaborations between employers and community colleges satisfies both the public interest in enhanced individual career development and the private interest in increased competitiveness. Community colleges provide both the job-specific needs of employers and the career development needs of employees. Community college programs are our closest substitute for formal employer training and have the potential to expedite the transmission of new skill requirements from the workplace into the education system.

Today, it is the education people get outside the workplace that ultimately counts the most. They can still make progress by learning on the job, but they have to get the job first. And there is not much on-the-job training except in jobs that require at least some college. The era when a person could start out on the loading dock and end up in the corner office is over. The proportion of college-educated workers that get training from their employers (21 percent) is twice as great as the proportion of workers with high school or less who receive similar training (10.9 percent).

Community colleges will need to continue to focus not only on incumbent workers but also on other nontraditional students as well (Carnevale and Jacobson 1998). The new economic reality is especially troublesome for the least skilled, including the educationally disadvantaged, dislocated workers, and welfare recipients. These populations are most in need of a second chance at education and training. Without access to remediation and skill enhancement in two-year colleges, the disadvantaged and dislocated are doomed to trade unemployment for underemployment and welfare recipients will only be able to move from welfare traps to poverty traps (Carnevale and Desrochers 1999a).

The first lesson we have learned from our experience with the "second-chance" education and training system—from the Neighborhood Youth Corps and Manpower Development Training Act in the 1960s to the Job Training Partnership Act (JTPA) in the 1990s—is that it is the *first* chance that counts. The real successes in the second-chance system usually come when people use the first-chance postsecondary education system. Evaluations tell us that positive earnings returns from employment and training programs usually result from enrollment in postsecondary institutions, especially in community colleges.

Public job trainers have long learned to rely on postsecondary teachers and trainers. In 1995, for example, more than 322,000 welfare recipients and 122,555 of their dependent children used Pell Grants as did 75,000 dislocated workers, 48 percent of whom also got student loans. Among welfare recipients who received Pell Grants, 55 percent attended community colleges, 25 percent attended four-year institutions, and 20 percent attended proprietary schools. Among dislocated workers who received Pell Grants, 40 percent attended community colleges, 30 percent attended four-year institutions, and 30 percent attended proprietary schools. The earnings gains among those who attended postsecondary institutions were three times as high as those who received other treatments in JTPA. Not only were earnings gains higher when disadvantaged and dislocated workers used postsecondary institutions, the costs were lower. The average expenditure per person among those using Pell Grants was $1,500 for dislocated workers and $1,850 for welfare recipients, compared to $3,500 for those who received other forms of training under the JTPA (Carnevale and Jacobson 1998).

A number of disturbing trends in public policy endanger access to community colleges for these nontraditional students.

Among higher education policymakers, there is persistent nervousness about further extending Pell Grants and student loans to nontraditional students because of high loan default rates and because of the quality of curricula in fly-by-night education and training institutions created to exploit the disadvantaged in the interest of garnering Pell Grants and loan revenues.

In addition, the arrival of "Generation Y" may tempt higher education institutions, including community colleges, to back away from nontraditional students. With the influx of traditional students, institutions will have less incentive and fewer resources to serve the special needs of nontraditional students who need flexible schedules and accommodations for job and family obligations. Social welfare and public training agencies also are unlikely to encourage their clients to enroll in accredited postsecondary schools because they are rapidly getting out of the education training business. Workforce training and social welfare policy have shifted from a "train-first" approach to a "work-first" approach, essentially abandoning education and training as an initial strategy for advancing opportunity for disadvantaged and dislocated workers.

Conclusion

Although the focus of this paper has been on the economic role of community colleges, it does not intend to ignore their cultural and political missions. Access to education is much more important than dollars and cents. The purpose of increasing educational opportunities is not solely to increase our national wealth, to enrich public treasuries, or to train foot soldiers for big or small business. The nation's community colleges need to prepare good neighbors and good citizens as well as good workers. And it is a primary responsibility of community college educators to help Americans—especially new Americans—find their way, to promote upward mobility, to discourage the constant reproduction of economic, political, and cultural elites, and to reinvigorate our society and its institutions with fresh and diverse talents and perspectives.

The inescapable reality is that ours is a society based on work. Unless each of us is able to find and keep a job, it is difficult for each of us to achieve the economic independence that allows us to become good citizens and good neighbors. We know that those who cannot get and keep a job eventually drop out of the political system and withdraw from community life. In some cases, they may create alternative economies, cultures, or political structures that are a threat to the mainstream.

If community college educators cannot fulfill their economic mission to help our youth and adults become successful workers, they also will fail in their cultural and political missions to create good citizens. The community college offers a place to learn about one's self as well as others in the American community, to mature, and to acquire skills and experiences that will help individuals thrive in an increasingly challenging society. But this challenge also applies to community colleges, which must change themselves to meet the needs of the new global economy, culture, and polity.

Community colleges' historical agility ideally positions these institutions to meet the requirements of America's most cost-conscious students and employers. Community colleges take seriously our society's moral commitment to assess and address the remedial needs of underprepared students. And community colleges' open doors enable our nation to address the unique educational needs of our racially, ethnically, socially, and regionally diverse society.

If the competition for tomorrow's jobs were a track meet—and entering the job market comparable to competing in the pole vault—(we would be forced to recognize that the bar has been set very high for the best jobs. Community colleges are the key to allowing all Americans who apply themselves to get a jump on the competition.

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